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## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

## Third Semester, M. Tech. - VLSI Design and Embedded System (MECE) Semester End Examination; Dec - 2016/Jan - 2017 Automotive Electronics

Time: 3 hrs Max. Marks: 100 *Note:* Answer *FIVE* full questions, selecting *ONE* full question from each unit. UNIT - I 1 a. With neat diagrams, explain the four strokes of a typical SI engine. 8 2 b. What do you mean by ignition in an IC engine? 10 c. What are the components of an ignition system? Explain each of them. 2 a. Briefly explain the working of a spark plug with neat diagrams of configuration and primary 6 current waveform. b. With a neat diagram, explain the disk braking system of an automobile. 6 c. Explain steering with relevant diagram and graph. 8 **UNIT-II** 3 a. Explain the optical method of measuring engine speed with relevant diagram and waveform. 6 b. Explain the role, construction and working of an EGR actuator. 6 c. What is an EGO sensor? What are the desirable EGO characteristics? Explain with relevant 8 diagrams. 4 a. What do you mean by Hall element and Hall effect? Explain Hall effect position sensor with 10 relevant diagrams. b. Explain EGR actuator with a neat diagram. 10 **UNIT - III** 5 a. Explain with a neat block diagram, electronic engine control system. 10 b. Explain the following engine performance terms: 10 i) Power ii) BSFC iii) Torque iv) Volumetric efficiency v) Thermal efficiency. 6 a. Write short note on: 10 i) Remote keyless entry ii) GPS. b. Explain idle speed control with relevant diagram. 10 **UNIT - IV** 7 a. Explain microprocessor based cruise control system with relevant diagrams and equations. 8 b. Explain Anti-lock Braking System (ABS) with relevant diagram, equations and graphs. 12

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8	a.	With a neat diagram, throttle actu	n.	10			
	b.	Write short notes on:		10			
	i) Adjustable solve absorber		ii) Electronically controlled suspension.				
			UNIT - V				
9 a. ]		Explain:					
	i) Dead reckoning navigation		ii) Sign post navigation.		10		
	b.	Write short notes on:			10		
		i) Alternative fuel engines	ii) Advance Driver Information system.		10		
10	10 a Explain low tire pressure warning system with relevant diagram.						
	b	Explain collision avoidance Rada	r warning system with relevant block diagr	am and equations.	10		

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